

SEQUENCE LISTING

<110> Luche, Ralf M.
Wei, Bo

<120> DSP-15 DUAL-SPECIFICITY PHOSPHATASE

<130> 200125.433

<140> US
<141> 2001-09-18

<160> 27

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 1980
<212> DNA
<213> Homo sapiens

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ctccgtgggg ctgtcctggg actgcaggat ggaggggaca atgatgatgc agcagaggcc 180
agttctgagc caacagagaa ggccccgagt gaggaggagc tccacgggga ccagacagac 240
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atggtacagc tgctgaggcc gcaggatgac atccgcctgg cagccagct ggaggcaccc 360
cggcctcccc ggctccgcta cctgctggta gtttctacac gagaaggaga aggtctgagc 420
caggatgaga cggtcctcct gggcgtggat ttccctgaca gcagctcccc cagctgcacc 480
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tgggccacac tccaggtatt gcaccaagca tgtgaggcag ctctaggcag cggccttgta 660
ccgggtggca gtgcctcac ctggggcagc cactaccagg agagactgaa ctccgaacag 720
agctgcctca atgagtggac ggctatggcc gacctggagt ctctgcggcc tcccagcgcc 780
gagcctggcg ggtcctcaga acaggagcag atggagcagg cgatccgtgc tgagctgtgg 840
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atggcccggg agattgacaa cttctaccct gagcgcttca cctaccacaa tgtgcgcctc 1140
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gctgcaagag cacagggcac ccacgtgctg gtccactgca agatggcggt cagccgctca 1260
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cagatctacc agggcatcct gacggccagc cgccagagcc atgtctggga gcagaaagtg 1440
ggtgtgggtct ccccagagga gcacccagcc cctgaagtct ctacaccatt cccaccttt 1500
ccgcccagaac ctgagggtgg tggggaggag aagggtgttag gcatggaaga gagccaggca 1560
gccccgaaag aagagcctgg gccacggcca cgtataaacc tccgaggggt catgaggtcc 1620
atcagtcttc tggagccctc cttggagctg gagagcacct cagagaccag tgacatgcca 1680
gaggtcttct cttcccacga gtcttcacat gaagagcctc tgcagccctt cccacagctt 1740
gcaaggacca agggaggcca gcaggtggac agggggcctc agcctgcctt gaagtcccgc 1800
cagtcaagtgg ttaccctcca gggcagtgcc gtggtgccca accggaccca ggccttccag 1860
gagcaggagc agggcaggg gcagggcag ggagagccct gcatttcctc tacgcccagg 1920
ttccggagg tggtagaca ggccagcgtg catgacagtg gagaggaggg cgaggcctga 1980

<210> 2
<211> 659
<212> PRT
<213> Homo sapiens

<400> 2
Met Ala Leu Val Thr Val Ser Arg Ser Pro Pro Gly Ser Gly Ala Ser
1 5 10 15
Thr Pro Val Gly Pro Trp Asp Gln Ala Val Gln Arg Arg Ser Arg Leu
20 25 30
Gln Arg Arg Gln Ser Phe Ala Val Leu Arg Gly Ala Val Leu Gly Leu
35 40 45
Gln Asp Gly Gly Asp Asn Asp Asp Ala Ala Glu Ala Ser Ser Glu Pro
50 55 60
Thr Glu Lys Ala Pro Ser Glu Glu Glu Leu His Gly Asp Gln Thr Asp
65 70 75 80
Phe Gly Gln Gly Ser Gln Ser Pro Gln Lys Gln Glu Glu Gln Arg Gln
85 90 95
His Leu His Leu Met Val Gln Leu Leu Arg Pro Gln Asp Asp Ile Arg
100 105 110
Leu Ala Ala Gln Leu Glu Ala Pro Arg Pro Pro Arg Leu Arg Tyr Leu
115 120 125
Leu Val Val Ser Thr Arg Glu Gly Glu Gly Leu Ser Gln Asp Glu Thr
130 135 140
Val Leu Leu Gly Val Asp Phe Pro Asp Ser Ser Pro Ser Cys Thr
145 150 155 160
Leu Gly Leu Val Leu Pro Leu Trp Ser Asp Thr Gln Val Tyr Leu Asp
165 170 175
Gly Asp Gly Gly Phe Ser Val Thr Ser Gly Gly Gln Ser Arg Ile Phe
180 185 190
Lys Pro Ile Ser Ile Gln Thr Met Trp Ala Thr Leu Gln Val Leu His
195 200 205
Gln Ala Cys Glu Ala Ala Leu Gly Ser Gly Leu Val Pro Gly Gly Ser
210 215 220
Ala Leu Thr Trp Ala Ser His Tyr Gln Glu Arg Leu Asn Ser Glu Gln
225 230 235 240
Ser Cys Leu Asn Glu Trp Thr Ala Met Ala Asp Leu Glu Ser Leu Arg
245 250 255
Pro Pro Ser Ala Glu Pro Gly Gly Ser Ser Glu Gln Glu Gln Met Glu
260 265 270
Gln Ala Ile Arg Ala Glu Leu Trp Lys Val Leu Asp Val Ser Asp Leu
275 280 285
Glu Ser Val Thr Ser Lys Glu Ile Arg Gln Ala Leu Glu Leu Arg Leu
290 295 300
Gly Leu Pro Leu Gln Gln Tyr Arg Asp Phe Ile Asp Asn Gln Met Leu
305 310 315 320
Leu Leu Val Ala Gln Arg Asp Arg Ala Ser Arg Ile Phe Pro His Leu
325 330 335
Tyr Leu Gly Ser Glu Trp Asn Ala Ala Asn Leu Glu Glu Leu Gln Arg
340 345 350
Asn Arg Val Thr His Ile Leu Asn Met Ala Arg Glu Ile Asp Asn Phe
355 360 365
Tyr Pro Glu Arg Phe Thr Tyr His Asn Val Arg Leu Trp Asp Glu Glu
370 375 380
Ser Ala Gln Leu Leu Pro His Trp Lys Glu Thr His Arg Phe Ile Glu

385	390	395	400
Ala Ala Arg Ala Gln Gly Thr His Val Leu Val His Cys Lys Met Gly			
405	410	415	
Val Ser Arg Ser Ala Ala Thr Val Leu Ala Tyr Ala Met Lys Gln Tyr			
420	425	430	
Glu Cys Ser Leu Glu Gln Ala Leu Arg His Val Gln Glu Leu Arg Pro			
435	440	445	
Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg Gln Leu Gln Ile Tyr Gln			
450	455	460	
Gly Ile Leu Thr Ala Ser Arg Gln Ser His Val Trp Glu Gln Lys Val			
465	470	475	480
Gly Gly Val Ser Pro Glu Glu His Pro Ala Pro Glu Val Ser Thr Pro			
485	490	495	
Phe Pro Pro Leu Pro Pro Glu Pro Glu Gly Gly Glu Glu Lys Val			
500	505	510	
Val Gly Met Glu Glu Ser Gln Ala Ala Pro Lys Glu Glu Pro Gly Pro			
515	520	525	
Arg Pro Arg Ile Asn Leu Arg Gly Val Met Arg Ser Ile Ser Leu Leu			
530	535	540	
Glu Pro Ser Leu Glu Leu Glu Ser Thr Ser Glu Thr Ser Asp Met Pro			
545	550	555	560
Glu Val Phe Ser Ser His Glu Ser Ser His Glu Glu Pro Leu Gln Pro			
565	570	575	
Phe Pro Gln Leu Ala Arg Thr Lys Gly Gly Gln Gln Val Asp Arg Gly			
580	585	590	
Pro Gln Pro Ala Leu Lys Ser Arg Gln Ser Val Val Thr Leu Gln Gly			
595	600	605	
Ser Ala Val Val Ala Asn Arg Thr Gln Ala Phe Gln Glu Gln Glu Gln			
610	615	620	
Gly Gln Gly Gln Gly Gln Gly Glu Pro Cys Ile Ser Ser Thr Pro Arg			
625	630	635	640
Phe Arg Lys Val Val Arg Gln Ala Ser Val His Asp Ser Gly Glu Glu			
645	650	655	
Gly Glu Ala			

<210> 3
<211> 156
<212> PRT
<213> Homo sapiens

<400> 3

Asp	Gly	Ser	Pro	Leu	Ser	Asn	Ser	Gln	Pro	Ser	Phe	Pro	Val	Glu	Ile
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Leu	Pro	Phe	Leu	Tyr	Leu	Gly	Cys	Ala	Lys	Asp	Ser	Thr	Asn	Leu	Asp
20								25						30	
Val	Leu	Glu	Glu	Phe	Gly	Ile	Lys	Tyr	Ile	Leu	Asn	Val	Thr	Pro	Asn
35								40						45	
Leu	Pro	Asn	Leu	Phe	Glu	Asn	Ala	Gly	Glu	Phe	Lys	Tyr	Lys	Gln	Ile
50								55						60	
Pro	Ile	Ser	Asp	His	Trp	Ser	Gln	Asn	Leu	Ser	Gln	Phe	Phe	Pro	Glu
65									70						80
Ala	Ile	Ser	Phe	Ile	Asp	Glu	Ala	Arg	Gly	Lys	Asn	Cys	Gly	Val	Leu
								85						95	
Val	His	Cys	Leu	Ala	Gly	Ile	Ser	Arg	Ser	Val	Thr	Val	Thr	Val	Ala
100								105						110	

Tyr Leu Met Gln Lys Leu Asn Leu Ser Met Asn Asp Ala Tyr Asp Ile
 115 120 125
 Val Lys Met Lys Lys Ser Asn Ile Ser Pro Asn Phe Asn Phe Met Gly
 130 135 140
 Gln Leu Leu Asp Phe Glu Arg Thr Leu Gly Leu Ser
 145 150 155

<210> 4
<211> 156
<212> PRT
<213> Homo sapiens

<400> 4
 Asp Gly Ser Pro Val Pro Ser Ser Gln Pro Ala Phe Pro Val Gln Ile
 1 5 10 15
 Leu Pro Tyr Leu Tyr Leu Gly Cys Ala Lys Asp Ser Thr Asn Leu Asp
 20 25 30
 Val Leu Gly Lys Tyr Gly Ile Lys Tyr Ile Leu Asn Val Thr Pro Asn
 35 40 45
 Leu Pro Asn Ala Phe Glu His Gly Gly Glu Phe Thr Tyr Lys Gln Ile
 50 55 60
 Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Gln Phe Phe Pro Glu
 65 70 75 80
 Ala Ile Ser Phe Ile Asp Glu Ala Arg Ser Lys Lys Cys Gly Val Leu
 85 90 95
 Val His Cys Leu Ala Gly Ile Ser Arg Ser Val Thr Val Thr Val Ala
 100 105 110
 Tyr Leu Met Gln Lys Met Asn Leu Ser Leu Asn Asp Ala Tyr Asp Phe
 115 120 125
 Val Lys Arg Lys Lys Ser Asn Ile Ser Pro Asn Phe Asn Phe Met Gly
 130 135 140
 Gln Leu Leu Asp Phe Glu Arg Thr Leu Gly Leu Ser
 145 150 155

<210> 5
<211> 156
<212> PRT
<213> Homo sapiens

<400> 5
 Ala Thr Pro Pro Pro Val Gly Leu Arg Ala Ser Phe Pro Val Gln Ile
 1 5 10 15
 Leu Pro Asn Leu Tyr Leu Gly Ser Ala Arg Asp Ser Ala Asn Leu Glu
 20 25 30
 Ser Leu Ala Lys Leu Gly Ile Arg Tyr Ile Leu Asn Val Thr Pro Asn
 35 40 45
 Leu Pro Asn Phe Phe Glu Lys Asn Gly Asp Phe His Tyr Lys Gln Ile
 50 55 60
 Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Arg Phe Phe Pro Glu
 65 70 75 80
 Ala Ile Glu Phe Ile Asp Glu Ala Leu Ser Gln Asn Cys Gly Val Leu
 85 90 95
 Val His Cys Leu Ala Gly Val Ser Arg Ser Val Thr Val Thr Val Ala
 100 105 110
 Tyr Leu Met Gln Lys Leu His Leu Ser Leu Asn Asp Ala Tyr Asp Leu

115	120	125
Val Lys Arg Lys Lys Ser Asn Ile Ser Pro Asn Phe Asn Phe Met Gly		
130	135	140
Gln Leu Leu Asp Phe Glu Arg Ser Leu Arg Leu Glu		
145	150	155

<210> 6
<211> 155
<212> PRT
<213> Homo sapiens

<400> 6		
Leu Ser Gln Pro Cys Leu Pro Val Pro Ser Val Gly Leu Thr Arg Ile		
1	5	10
		15
Leu Pro His Leu Tyr Leu Gly Ser Gln Lys Asp Val Leu Asn Lys Asp		
20	25	30
Leu Met Thr Gln Asn Gly Ile Ser Tyr Val Leu Asn Ala Ser Asn Ser		
35	40	45
Cys Pro Lys Pro Asp Phe Ile Cys Glu Ser Arg Phe Met Arg Val Pro		
50	55	60
Ile Asn Asp Asn Tyr Cys Glu Lys Leu Leu Pro Trp Leu Asp Lys Ser		
65	70	75
		80
Ile Glu Phe Ile Asp Lys Ala Lys Leu Ser Ser Cys Gln Val Ile Val		
85	90	95
His Cys Leu Ala Gly Ile Ser Arg Ser Ala Thr Ile Ala Ile Ala Tyr		
100	105	110
Ile Met Lys Thr Met Gly Met Ser Ser Asp Asp Ala Tyr Arg Phe Val		
115	120	125
Lys Asp Arg Arg Pro Ser Ile Ser Pro Asn Phe Asn Phe Leu Gly Gln		
130	135	140
Leu Leu Glu Tyr Glu Arg Thr Leu Lys Leu Leu		
145	150	155

<210> 7
<211> 154
<212> PRT
<213> Homo sapiens

<400> 7		
Ser Asp Pro Arg Val Pro Ile Tyr Asp Gln Gly Gly Pro Val Glu Ile		
1	5	10
		15
Leu Pro Tyr Leu Tyr Leu Gly Ser Cys Asn His Ser Ser Asp Leu Gln		
20	25	30
Gly Leu Gln Ala Cys Gly Ile Thr Ala Val Leu Asn Val Ser Ala Ser		
35	40	45
Cys Pro Asn His Phe Glu Gly Leu Phe His Tyr Lys Ser Ile Pro Val		
50	55	60
Glu Asp Asn Gln Met Val Glu Ile Ser Ala Trp Phe Gln Glu Ala Ile		
65	70	75
		80
Ser Phe Ile Asp Ser Val Lys Asn Ser Gly Gly Arg Val Leu Val His		
85	90	95
Cys Gln Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu		
100	105	110
Ile Gln Ser His Arg Val Arg Leu Asp Glu Ala Phe Asp Phe Val Lys		
115	120	125

Gln Arg Arg Gly Val Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu
 130 135 140
 Leu Gln Leu Glu Thr Gln Val Leu Cys His
 145 150

<210> 8
 <211> 154
 <212> PRT
 <213> Homo sapiens

<400> 8
 Ser Ser Cys Ser Thr Pro Leu Tyr Asp Gln Gly Gly Pro Val Glu Ile
 1 5 10 15
 Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ser Arg Lys Asp
 20 25 30
 Met Leu Asp Ala Leu Gly Ile Thr Ala Leu Ile Asn Val Ser Ala Asn
 35 40 45
 Cys Pro Asn His Phe Glu Gly His Tyr Gln Tyr Lys Ser Ile Pro Val
 50 55 60
 Glu Asp Asn His Lys Ala Asp Ile Ser Ser Trp Phe Asn Glu Ala Ile
 65 70 75 80
 Asp Phe Ile Asp Ser Ile Lys Asn Ala Gly Gly Arg Val Phe Val His
 85 90 95
 Cys Gln Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu
 100 105 110
 Met Arg Thr Asn Arg Val Lys Leu Asp Glu Ala Phe Glu Phe Val Lys
 115 120 125
 Gln Arg Arg Ser Ile Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu
 130 135 140
 Leu Gln Phe Glu Ser Gln Val Leu Ala Pro
 145 150

<210> 9
 <211> 154
 <212> PRT
 <213> Homo sapiens

<400> 9
 Ser Ser Cys Gly Thr Pro Leu His Asp Gln Gly Gly Pro Val Glu Ile
 1 5 10 15
 Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ala Arg Arg Asp
 20 25 30
 Met Leu Asp Ala Leu Gly Ile Thr Ala Leu Leu Asn Val Ser Ser Asp
 35 40 45
 Cys Pro Asn His Phe Glu Gly His Tyr Gln Tyr Lys Cys Ile Pro Val
 50 55 60
 Glu Asp Asn His Lys Ala Asp Ile Ser Ser Trp Phe Met Glu Ala Ile
 65 70 75 80
 Glu Tyr Ile Asp Ala Val Lys Asp Cys Arg Gly Arg Val Leu Val His
 85 90 95
 Cys Gln Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu
 100 105 110
 Met Met Lys Lys Arg Val Arg Leu Glu Glu Ala Phe Glu Phe Val Lys
 115 120 125
 Gln Arg Arg Ser Ile Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu

130	135	140
Leu Gln Phe Glu Ser Gln Val	Leu Ala Thr	
145	150	

<210> 10
<211> 154
<212> PRT
<213> Homo sapiens

130	135	140
Leu Gln Phe Glu Ser Gln Val	Leu Ala Thr	
145	150	

<210> 10	<211> 154	<212> PRT
<213> Homo sapiens		

<400> 10	<400> 10	<400> 10
Asn Val Ser Tyr Arg Pro Ala Tyr Asp Gln Gly Gly Pro Val Glu Ile		
1 5 10 15		
Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ser Lys Cys Glu		
20 25 30		
Phe Leu Ala Asn Leu His Ile Thr Ala Leu Leu Asn Val Ser Arg Arg		
35 40 45		
Thr Ser Glu Ala Cys Met Thr His Leu His Tyr Lys Trp Ile Pro Val		
50 55 60		
Glu Asp Ser His Thr Ala Asp Ile Ser Ser His Phe Gln Glu Ala Ile		
65 70 75 80		
Asp Phe Ile Asp Cys Val Arg Glu Lys Gly Gly Lys Val Leu Val His		
85 90 95		
Cys Glu Ala Gly Ile Ser Arg Ser Pro Thr Ile Cys Met Ala Tyr Leu		
100 105 110		
Met Lys Thr Lys Gln Phe Arg Leu Lys Glu Ala Phe Asp Tyr Ile Lys		
115 120 125		
Gln Arg Arg Ser Met Val Ser Pro Asn Phe Gly Phe Met Gly Gln Leu		
130 135 140		
Leu Gln Tyr Glu Ser Glu Ile Leu Pro Ser		
145 150		

<210> 11
<211> 163
<212> PRT
<213> Homo sapiens

<210> 11	<211> 163	<212> PRT
<213> Homo sapiens		

<400> 11	<400> 11	<400> 11
Asp Gly Ser Gly Cys Tyr Ser Leu Pro Ser Gln Pro Cys Asn Glu Val		
1 5 10 15		
Thr Pro Arg Ile Tyr Val Gly Asn Ala Ser Val Ala Gln Asp Ile Pro		
20 25 30		
Lys Leu Gln Lys Leu Gly Ile Thr His Val Leu Asn Ala Ala Glu Gly		
35 40 45		
Arg Ser Phe Met His Val Asn Thr Asn Ala Asn Phe Tyr Lys Asp Ser		
50 55 60		
Gly Ile Thr Tyr Leu Gly Ile Lys Ala Asn Asp Thr Gln Glu Phe Asn		
65 70 75 80		
Leu Ser Ala Tyr Phe Glu Arg Ala Ala Asp Phe Ile Asp Gln Ala Leu		
85 90 95		
Ala Gln Lys Asn Gly Arg Val Leu Val His Cys Arg Glu Gly Tyr Ser		
100 105 110		
Arg Ser Pro Thr Leu Val Ile Ala Tyr Leu Met Met Arg Gln Lys Met		
115 120 125		
Asp Val Lys Ser Ala Leu Ser Ile Val Arg Gln Asn Arg Glu Ile Gly		
130 135 140		

Pro Asn Asp Gly Phe Leu Ala Gln Leu Cys Gln Leu Asn Asp Arg Leu
 145 150 155 160
 Ala Lys Glu

<210> 12
 <211> 140
 <212> PRT
 <213> Homo sapiens

<400> 12
 Met Glu Gly Thr Met Met Gln Gln Arg Pro Val Leu Ser Gln Gln
 1 5 10 15
 His Pro Ser Phe Ile Leu Asn Ser Ser Pro Ala His Ser Pro Met Ala
 20 25 30
 Arg Glu Ile Asp Asn Phe Tyr Pro Glu Arg Phe Thr Tyr His Asn Val
 35 40 45
 Arg Leu Trp Asp Glu Glu Ser Ala Gln Leu Leu Pro His Trp Lys Glu
 50 55 60
 Thr His Arg Phe Ile Glu Ala Ala Arg Ala Gln Gly Thr His Val Leu
 65 70 75 80
 Val His Cys Lys Met Gly Val Ser Arg Ser Ala Ala Thr Val Leu Ala
 85 90 95
 Tyr Ala Met Lys Gln Tyr Glu Cys Ser Leu Glu Gln Ala Leu Arg His
 100 105 110
 Val Gln Glu Leu Arg Pro Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg
 115 120 125
 Gln Leu Gln Ile Tyr Gln Gly Ile Leu Thr Ala Arg
 130 135 140

<210> 13
 <211> 737
 <212> PRT
 <213> Drosophila melanogaster

<400> 13
 Gln Ser Glu Arg Arg Leu Ser Thr Asp Ser Thr Arg Ser Ser Asn Ser
 1 5 10 15
 Thr Gln Ser Asn Asn Ser Asp Ile Gln Leu His Leu Gln Ser Met Phe
 20 25 30
 Tyr Leu Leu Gln Arg Glu Asp Thr Leu Lys Met Ala Val Lys Leu Glu
 35 40 45
 Ser Gln Arg Ser Asn Arg Thr Arg Tyr Leu Val Ile Ala Ser Arg Ser
 50 55 60
 Cys Cys Arg Ser Gly Thr Ser Asp Arg Arg Arg His Arg Ile Met Arg
 65 70 75 80
 His His Ser Val Lys Val Gly Gly Ser Ala Gly Thr Lys Ser Ser Thr
 85 90 95
 Ser Pro Ala Val Pro Thr Gln Arg Gln Leu Ser Val Glu Gln Thr Ala
 100 105 110
 Thr Glu Ala Ser Ser Lys Cys Asp Lys Thr Ala Asp Lys Glu Asn Ala
 115 120 125
 Thr Ala Ala Gly Asp Asn Lys Asn Thr Ser Gly Met Glu Glu Ser Cys
 130 135 140
 Leu Leu Gly Ile Asp Cys Asn Glu Arg Thr Thr Ile Gly Leu Val Val

145	150	155	160
Pro Ile Leu Ala Asp Thr Thr Ile His Leu Asp Gly Asp Gly Gly Phe			
165	170	175	
Ser Val Lys Val Tyr Glu Lys Thr His Ile Phe Lys Pro Val Ser Val			
180	185	190	
Gln Ala Met Trp Ser Ala Leu Gln Thr Leu His Lys Val Ser Lys Lys			
195	200	205	
Ala Arg Glu Asn Asn Phe Tyr Ala Ser Gly Pro Ser His Asp Trp Leu			
210	215	220	
Ser Ser Tyr Glu Arg Arg Ile Glu Ser Asp Gln Ser Cys Leu Asn Glu			
225	230	235	240
Trp Asn Ala Met Asp Ala Leu Glu Ser Arg Arg Pro Pro Ser Pro Asp			
245	250	255	
Ala Ile Arg Asn Lys Pro Pro Glu Lys Glu Glu Thr Glu Ser Val Ile			
260	265	270	
Lys Met Lys Leu Lys Ala Ile Met Met Ser Val Asp Leu Asp Glu Val			
275	280	285	
Thr Ser Lys Tyr Ile Arg Gly Arg Leu Glu Glu Ile Leu Asp Met Asp			
290	295	300	
Leu Gly Glu Tyr Lys Ser Phe Ile Asp Ala Glu Met Leu Val Ile Leu			
305	310	315	320
Gly Gln Met Asp Ala Pro Thr Lys Ile Phe Glu His Val Tyr Leu Gly			
325	330	335	
Ser Glu Trp Asn Ala Ser Asn Leu Glu Glu Leu Gln Lys Asn Gly Val			
340	345	350	
Arg His Ile Leu Asn Val Thr Arg Glu Ile Asp Asn Phe Phe Pro Gly			
355	360	365	
Thr Phe Glu Tyr Phe Asn Val Arg Val Tyr Asp Asp Glu Lys Thr Asn			
370	375	380	
Leu Leu Lys Tyr Trp Asp Asp Thr Phe Arg Tyr Ile Thr Arg Ala Lys			
385	390	395	400
Ala Glu Gly Ser Lys Val Leu Val His Cys Lys Met Gly Val Ser Arg			
405	410	415	
Ser Ala Ser Val Val Ile Ala Tyr Ala Met Lys Ala Tyr Gln Trp Glu			
420	425	430	
Phe Gln Gln Ala Leu Glu His Val Lys Lys Arg Arg Ser Cys Ile Lys			
435	440	445	
Pro Asn Lys Asn Phe Leu Asn Gln Leu Glu Thr Tyr Ser Gly Met Leu			
450	455	460	
Asp Ala Met Lys Asn Lys Glu Lys Leu Gln Arg Ser Lys Ser Glu Thr			
465	470	475	480
Asn Leu Lys Ser Thr Lys Asp Ala Arg Leu Leu Pro Gly Ser Glu Pro			
485	490	495	
Thr Pro Leu Ile Gln Ala Leu Asn Gln Ala Lys Ser Lys Ser Thr Gly			
500	505	510	
Glu Ala Gly Val Thr Pro Asp Gly Glu Glu Glu Asp Gly Ser Arg Met			
515	520	525	
His Arg Arg Ser Ile Ala Gln Lys Ser Gln Arg Arg Met Val Arg Arg			
530	535	540	
Ser Ser Ser Thr Ser Pro Lys Thr Gln Thr Ala Val Val Thr Lys Gln			
545	550	555	560
Gln Ser Gln Ser Met Glu Asn Leu Thr Pro Glu Arg Ser Val Ala Glu			
565	570	575	
Glu Pro Lys Asn Met Arg Phe Pro Gly Ser Asn Gly Glu Asn Tyr Ser			
580	585	590	
Val Thr Gln Asn Gln Val Leu His Ile Gln Lys His Thr Pro Leu Ser			
595	600	605	

Val Arg Thr Arg Ile His Asp Leu Glu Ala His Arg Ala Asp Gln Leu
 610 615 620
 Pro Gln Gln Pro Val Trp Thr Ser Leu Thr Lys Leu Ile Thr Gln Thr
 625 630 635 640
 Ser His Leu Gly Lys Ser Val Ser Gly Ser Ser Gly Asn Ile Asp
 645 650 655
 Ser Arg Arg Asp Ser Ser Cys Ser Asp Val Phe Ser Ser Gln Val Asp
 660 665 670
 Ser Val Phe Ala Lys Asp Glu Gly Glu Lys Arg Gln Arg Arg Lys Thr
 675 680 685
 His Ser Trp Thr Glu Ser Leu Gly Pro Ser Gly Gly Ile Val Leu Asp
 690 695 700
 Pro Thr Pro Gln Gln Gln Lys Gln Ser Asn Ala Ile Leu Arg Pro
 705 710 715 720
 Arg Gly Thr Arg Gln Arg Glu Leu Pro Ser Arg His Ala Ser Trp Gly
 725 730 735
 Ser

<210> 14
 <211> 509
 <212> PRT
 <213> Homo sapiens

<400> 14
 Met Thr Leu Ser Thr Leu Ala Arg Lys Arg Lys Ala Pro Leu Ala Cys
 1 5 10 15
 Thr Cys Ser Leu Gly Gly Pro Asp Met Ile Pro Tyr Phe Ser Ala Asn
 20 25 30
 Ala Val Ile Ser Gln Asn Ala Ile Asn Gln Leu Ile Ser Glu Ser Phe
 35 40 45
 Leu Thr Val Lys Gly Ala Ala Leu Phe Leu Pro Arg Gly Asn Gly Ser
 50 55 60
 Ser Thr Pro Arg Ile Ser His Arg Arg Asn Lys His Ala Gly Asp Leu
 65 70 75 80
 Gln Gln His Leu Gln Ala Met Phe Ile Leu Leu Arg Pro Glu Asp Asn
 85 90 95
 Ile Arg Leu Ala Val Arg Leu Glu Ser Thr Tyr Gln Asn Arg Thr Arg
 100 105 110
 Tyr Met Val Val Val Ser Thr Asn Gly Arg Gln Asp Thr Glu Glu Ser
 115 120 125
 Ile Val Leu Gly Met Asp Phe Ser Ser Asn Asp Ser Ser Thr Cys Thr
 130 135 140
 Met Gly Leu Val Leu Pro Leu Trp Ser Asp Thr Leu Ile His Leu Asp
 145 150 155 160
 Gly Asp Gly Gly Phe Ser Val Ser Thr Asp Asn Arg Val His Ile Phe
 165 170 175
 Lys Pro Val Ser Val Gln Ala Met Trp Ser Ala Leu Gln Ser Leu His
 180 185 190
 Lys Ala Cys Glu Val Ala Arg Ala His Asn Tyr Tyr Pro Gly Ser Leu
 195 200 205
 Phe Leu Thr Trp Val Ser Tyr Tyr Glu Ser His Ile Asn Ser Asp Gln
 210 215 220
 Ser Ser Val Asn Glu Trp Asn Ala Met Gln Asp Val Gln Ser His Arg
 225 230 235 240
 Pro Asp Ser Pro Ala Leu Phe Thr Asp Ile Pro Thr Glu Arg Glu Arg

245	250	255
Thr Glu Arg Leu Ile Lys Thr Lys Leu Arg Glu Ile Met Met Gln Lys		
260	265	270
Asp Leu Glu Asn Ile Thr Ser Lys Glu Ile Arg Thr Glu Leu Glu Met		
275	280	285
Gln Met Val Cys Asn Leu Arg Glu Phe Lys Glu Phe Ile Asp Asn Glu		
290	295	300
Met Ile Val Ile Leu Gly Gln Met Asp Ser Pro Thr Gln Ile Phe Glu		
305	310	315
His Val Phe Leu Gly Ser Glu Trp Asn Ala Ser Asn Leu Glu Asp Leu		
325	330	335
Gln Asn Arg Gly Val Arg Tyr Ile Leu Asn Val Thr Arg Glu Ile Asp		
340	345	350
Asn Phe Phe Pro Gly Val Phe Glu Tyr His Asn Ile Arg Val Tyr Asp		
355	360	365
Glu Glu Ala Thr Asp Leu Leu Ala Tyr Trp Asn Asp Thr Tyr Lys Phe		
370	375	380
Ile Ser Lys Ala Lys Lys His Gly Ser Lys Cys Leu Val His Cys Lys		
385	390	395
Met Gly Val Ser Arg Ser Ala Ser Thr Val Ile Ala Tyr Ala Met Lys		
405	410	415
Glu Tyr Gly Trp Asn Leu Asp Arg Ala Tyr Asp Tyr Val Lys Glu Arg		
420	425	430
Arg Thr Val Thr Lys Pro Asn Pro Ser Phe Met Arg Gln Leu Glu Glu		
435	440	445
Tyr Gln Gly Ile Leu Leu Ala Ser Phe Leu Gly Leu Ile His Gly Gly		
450	455	460
Arg Asp Lys Pro Trp Gly Glu Lys Ser Thr Glu Phe Glu Ser Val Asp		
465	470	475
Leu Val Ser Ile Pro Gly Ser Pro Ser Cys Cys Asn Pro Glu Lys Leu		
485	490	495
Leu His Ile Ser His Pro Tyr Leu Thr Pro Ser Ile Lys		
500	505	

<210> 15

<211> 552

<212> PRT

<213> Homo sapiens

<400> 15

Met Val Leu Arg Leu Trp Ser Asp Thr Lys Ile His Leu Asp Gly Asp			
1	5	10	15
Gly Gly Phe Ser Val Ser Thr Ala Gly Arg Met His Ile Phe Lys Pro			
20	25	30	
Val Ser Val Gln Ala Met Trp Ser Ala Leu Gln Val Leu His Lys Ala			
35	40	45	
Cys Glu Val Ala Arg Arg His Asn Tyr Phe Pro Gly Gly Val Ala Leu			
50	55	60	
Ile Trp Ala Thr Tyr Tyr Glu Ser Cys Ile Ser Ser Glu Gln Ser Cys			
65	70	75	80
Ile Asn Glu Trp Asn Ala Met Gln Asp Leu Glu Ser Thr Arg Pro Asp			
85	90	95	
Ser Pro Ala Leu Phe Val Asp Lys Pro Thr Glu Gly Glu Arg Thr Glu			
100	105	110	
Arg Leu Ile Lys Ala Lys Leu Arg Ser Ile Met Met Ser Gln Asp Leu			
115	120	125	

Glu Asn Val Thr Ser Lys Glu Ile Arg Asn Glu Leu Glu Lys Gln Met
 130 135 140
 Asn Cys Asn Leu Lys Glu Leu Lys Glu Phe Ile Asp Asn Glu Met Leu
 145 150 155 160
 Leu Ile Leu Gly Gln Met Asp Lys Pro Ser Leu Ile Phe Asp His Leu
 165 170 175
 Tyr Leu Gly Ser Glu Trp Asn Ala Ser Asn Leu Glu Glu Leu Gln Gly
 180 185 190
 Ser Gly Val Asp Tyr Ile Leu Asn Val Thr Arg Glu Ile Asp Asn Phe
 195 200 205
 Phe Pro Gly Leu Phe Ala Tyr His Asn Ile Arg Val Tyr Asp Glu Glu
 210 215 220
 Thr Thr Asp Leu Leu Ala His Trp Asn Glu Ala Tyr His Phe Ile Asn
 225 230 235 240
 Lys Ala Lys Arg Asn His Ser Lys Cys Leu Val His Cys Lys Met Gly
 245 250 255
 Val Ser Arg Ser Ala Ser Thr Val Ile Ala Tyr Ala Met Lys Glu Phe
 260 265 270
 Gly Trp Pro Leu Glu Lys Ala Tyr Asn Tyr Val Lys Gln Lys Arg Ser
 275 280 285
 Ile Thr Arg Pro Asn Ala Gly Phe Met Arg Gln Leu Ser Glu Tyr Glu
 290 295 300
 Gly Ile Leu Asp Ala Ser Lys Gln Arg His Asn Lys Leu Trp Arg Gln
 305 310 315 320
 Gln Thr Asp Ser Ser Leu Gln Gln Pro Val Asp Asp Pro Ala Gly Pro
 325 330 335
 Gly Asp Phe Leu Pro Glu Thr Pro Asp Gly Thr Pro Glu Ser Gln Leu
 340 345 350
 Pro Phe Leu Asp Asp Ala Ala Gln Pro Gly Leu Gly Pro Pro Leu Pro
 355 360 365
 Cys Cys Phe Arg Arg Leu Ser Asp Pro Leu Leu Pro Ser Pro Glu Asp
 370 375 380
 Glu Thr Gly Ser Leu Val His Leu Glu Asp Pro Glu Arg Glu Ala Leu
 385 390 395 400
 Leu Glu Glu Ala Ala Pro Pro Ala Glu Val His Arg Pro Ala Arg Gln
 405 410 415
 Pro Gln Gln Gly Ser Gly Leu Cys Glu Lys Asp Val Lys Lys Lys Leu
 420 425 430
 Glu Phe Gly Ser Pro Lys Gly Arg Ser Gly Ser Leu Leu Gln Val Glu
 435 440 445
 Glu Thr Glu Arg Glu Glu Gly Leu Gly Ala Gly Arg Trp Gly Gln Leu
 450 455 460
 Pro Thr Gln Leu Asp Gln Asn Leu Leu Asn Ser Glu Asn Leu Asn Asn
 465 470 475 480
 Asn Ser Lys Arg Ser Cys Pro Asn Gly Met Glu Val Gly Arg Ala Arg
 485 490 495
 Pro Ala Gly Trp His Thr Pro Ser Leu Pro Ser His Ser Asn Trp Pro
 500 505 510
 Thr Ser Ala Ser Val Val Gly Thr Thr Gly Thr Arg His His Thr Gln
 515 520 525
 Leu Ile Phe Phe Tyr Cys Leu Leu Trp Ala Pro Ser Ser His Leu Gln
 530 535 540
 Gly Pro Glu Gly Ser Phe Thr Gly
 545 550

<211> 10
<212> PRT
<213> Homo sapiens

<400> 16
Val His Cys Lys Met Gly Val Ser Arg Ser
1 5 10

<210> 17
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Conserved homology region from eight DSPs having
MAP-kinase phosphatase activity

<400> 17
Asn Gly Arg Val Leu Val His Cys Gln Ala Gly Ile Ser Arg Ser Gly
1 5 10 15
Thr Asn Ile Leu Ala Tyr Leu Met
20

<210> 18
<211> 22
<212> PRT
<213> Homo sapiens

<400> 18
Val Leu Val His Cys Lys Met Gly Val Ser Arg Ser Ala Ala Thr Val
1 5 10 15
Leu Ala Tyr Ala Met Lys
20

<210> 19
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 19
tgtcgatgaa gtcacgtac tgctggaggg 30

<210> 20
<211> 1416
<212> DNA
<213> Mus musculus

<400> 20
atggccctgg tcacagttag ccgttgcggcc cggggcagcg gcgcctccac gcccgtgggg 60
ccctgggacc aggcggtcca gcbaaggagt cgactccagc gaaggcagag ctttgcggtg 120
ctccgtgggg ctgtcctggg actgcaggat ggagggaca atgatgatgc agcagaggcc 180

agt	tctgagc	caacagagaa	ggccccgagt	gaggaggago	tccacgggga	ccagacagac	240
ttc	gggcaag	gatcccagag	tccccagaag	caggaggago	agaggcagca	cctgcacctc	300
atg	gttacagc	tgctgaggcc	gcaggatgac	atccgcctgg	cagcccagct	ggagggcaccc	360
cgg	cctcccc	ggctccgcta	cctgctggta	gtttctacac	gagaaggaga	aggcttgagc	420
cag	gatgaga	cggttcctct	gggcgtggat	ttccctgaca	gcagctcccc	cagctgcacc	480
ctg	gggcctgg	tcttgcctct	ctggagtgac	acccaggtgt	acttagatgg	agacggggc	540
ttc	agcgtga	cgtctggtgg	gcaaagccgg	atcttcaagc	ccatctccat	ccagaccatg	600
tgg	ggccacac	tccaggtatt	gcacccaagca	tgtgaggcag	ctctaggcag	cggccttgt	660
ccg	gggtggca	gtgcctcac	ctgggccagc	cactaccagg	agagactgaa	ctccgaacag	720
agc	tgcctca	atgagttggac	ggctatggcc	gacctggagt	ctctgccc	tcccagcgcc	780
gag	cctggcg	ggtcctcaga	acaggagcag	atggagcagg	cgatccgtgc	tgagctgtgg	840
aa	agtgttgg	atgtcaagtga	cctggagagt	gtcacttcca	aagagatccg	ccagctctg	900
gag	ctgccc	tgggctccc	cctccagcag	taccgtgact	tcatcgacaa	ccagatgctg	960
ctg	ctgggttgg	cacagcggga	ccgagcctcc	cgcatcttcc	cccacctcta	cctggctca	1020
gag	tggaaacg	cagcaaacct	ggaggagctg	cagaggaaca	gggtcaccca	catcttgaac	1080
atg	ggcccccgg	agattgacaa	cttctaccct	gagcgcttca	cctaccacaa	tgtgcgcctc	1140
tgg	ggatgagg	agtgcgcctc	gctgtgccc	cacttggaaagg	agacgcacccg	cttcattttag	1200
gct	gcaagag	cacagggcac	ccacgtgctg	gtccactgca	agatgggcgt	cagccgctca	1260
gcgg	ccacag	tgctggctta	tgccatgaag	cagtacgaat	gcagcctgga	gcagccctg	1320
cgc	cacgtgc	aggagctccg	gcccatcgcc	cgcccccaacc	ctggcttct	gcgccagctg	1380
cag	atctacc	agggcatcct	gacggccaga	acctqaa			1416

<210> 21

<211> 471

<212> PRT

<213> Mus musculus

<400> 21

Met	Ala	Leu	Val	Thr	Val	Ser	Arg	Ser	Pro	Pro	Gly	Ser	Gly	Ala	Ser
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Thr	Pro	Val	Gly	Pro	Trp	Asp	Gln	Ala	Val	Gln	Arg	Arg	Ser	Arg	Leu
					20				25					30	
Gln	Arg	Arg	Gln	Ser	Phe	Ala	Val	Leu	Arg	Gly	Ala	Val	Leu	Gly	Leu
						35		40					45		
Gln	Asp	Gly	Gly	Asp	Asn	Asp	Asp	Ala	Ala	Glu	Ala	Ser	Ser	Glu	Pro
						50		55				60			
Thr	Glu	Lys	Ala	Pro	Ser	Glu	Glu	Glu	Leu	His	Gly	Asp	Gln	Thr	Asp
65					70				75					80	
Phe	Gly	Gln	Gly	Ser	Gln	Ser	Pro	Gln	Lys	Gln	Glu	Glu	Gln	Arg	Gln
					85				90					95	
His	Leu	His	Leu	Met	Val	Gln	Leu	Leu	Arg	Pro	Gln	Asp	Asp	Ile	Arg
					100			105						110	
Leu	Ala	Ala	Gln	Leu	Glu	Ala	Pro	Arg	Pro	Pro	Arg	Leu	Arg	Tyr	Leu
					115			120					125		
Leu	Val	Val	Ser	Thr	Arg	Glu	Gly	Glu	Gly	Leu	Ser	Gln	Asp	Glu	Thr
					130		135				140				
Val	Leu	Leu	Gly	Val	Asp	Phe	Pro	Asp	Ser	Ser	Ser	Pro	Ser	Cys	Thr
145					150				155					160	
Leu	Gly	Leu	Val	Leu	Pro	Leu	Trp	Ser	Asp	Thr	Gln	Val	Tyr	Leu	Asp
					165			170					175		
Gly	Asp	Gly	Gly	Phe	Ser	Val	Thr	Ser	Gly	Gly	Gln	Ser	Arg	Ile	Phe
					180			185					190		
Lys	Pro	Ile	Ser	Ile	Gln	Thr	Met	Trp	Ala	Thr	Leu	Gln	Val	Leu	His
					195			200					205		
Gln	Ala	Cys	Glu	Ala	Ala	Leu	Gly	Ser	Gly	Leu	Val	Pro	Gly	Gly	Ser
					210		215				220				
Ala	Leu	Thr	Trp	Ala	Ser	His	Tyr	Gln	Glu	Arg	Leu	Asn	Ser	Glu	Gln

225	230	235	240
Ser Cys Leu Asn Glu Trp Thr Ala Met Ala Asp	Leu Glu Ser	Leu Arg	
245	250	255	
Pro Pro Ser Ala Glu Pro Gly Gly Ser Ser	Glu Gln Glu	Gln Met Glu	
260	265	270	
Gln Ala Ile Arg Ala Glu Leu Trp Lys Val	Leu Asp Val	Ser Asp Leu	
275	280	285	
Glu Ser Val Thr Ser Lys Glu Ile Arg Gln Ala	Leu Glu	Leu Arg Leu	
290	295	300	
Gly Leu Pro Leu Gln Gln Tyr Arg Asp Phe	Ile Asp Asn Gln	Met Leu	
305	310	315	320
Leu Leu Val Ala Gln Arg Asp Arg Ala Ser	Arg Ile Phe	Pro His Leu	
325	330	335	
Tyr Leu Gly Ser Glu Trp Asn Ala Ala Asn	Leu Glu	Leu Gln Arg	
340	345	350	
Asn Arg Val Thr His Ile Leu Asn Met Ala Arg	Glu Ile Asp Asn Phe		
355	360	365	
Tyr Pro Glu Arg Phe Thr Tyr His Asn Val Arg	Leu Trp Asp Glu	Glu	
370	375	380	
Ser Ala Gln Leu Leu Pro His Trp Lys Glu	Thr His Arg Phe	Ile Glu	
385	390	395	400
Ala Ala Arg Ala Gln Gly Thr His Val	Leu Val His Cys Lys	Met Gly	
405	410	415	
Val Ser Arg Ser Ala Ala Thr Val	Leu Ala Tyr Ala Met	Lys Gln Tyr	
420	425	430	
Glu Cys Ser Leu Glu Gln Ala Leu Arg His	Val Gln Glu	Leu Arg Pro	
435	440	445	
Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg Gln	Leu Gln Ile Tyr Gln		
450	455	460	
Gly Ile Leu Thr Ala Arg Thr			
465	470		

<210> 22
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 22
gccgcactgg aaggagacgc accg

24

<210> 23
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 23
gcgccagctg cagatctacc agggcat

27

<210> 24
<211> 28

<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 24
cactttccac agctcagcac ggatcgcc 28

<210> 25
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 25
cgcagagact ccaggtcgcc catagcc 27

<210> 26
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 26
ggggttgagg gaagggccg tgc 23

<210> 27
<211> 6
<212> PRT
<213> Homo sapiens

<400> 27
Asp Ala Asp Glu Tyr Leu
1 5